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Some cavernicolous Diptera of the Geneva Museum

by

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With 4 figures

ABSTRACT

Sixteen species of the families of Helomyzidae, Sphaeroceridae, Camillidae, Milichiidae and Carnidae, collected in caves of Europe, America, Oceania and SW-Africa, had been studied from the collection of the Geneva Museum. *Katacamilla cavernicola* gen. n. et sp. n. and *Leptometopa aelleni* sp. n. are described, some new faunistical data of the other species and a key for the genera of Camillidae are given.

INTRODUCTION

Through the courtesy of Dr. Villy Aellen, the Director of the Muséum d'Histoire naturelle, Genève, I received a material of about 150 vials of dipterous flies, which were preserved in the Geneva Museum and collected by P. Strinati, V. Aellen and other scientific workers of the Geneva Museum in European, American, Australian, SW-African and Pacific Islands caves. The valuable and interesting material was ordered into families and species of the families Helomyzidae, Sphaeroceridae, Camillidae, Milichiidae and Carnidae were identified. Seventeen species were found in this material, namely three species of the family Helomyzidae, seven species of Sphaeroceridae, one species each of the families Camillidae and Carnidae and five species of the family Milichiidae. It is wellknown that there are numerous cave-dwelling species in the families Helomyzidae and Sphaeroceridae (e.g. GORODKOV 1970, WOLF 1934-38, PAPP & PLACHTER 1976, etc.); also a few milichiid species has been known as cavernicolous but species of the families Camillidae and Carnidae are recorded here first time from caves. *Katacamilla cavernicola* gen. n. et sp. n. and *Leptometopa aelleni* sp. n. are described below as new to science. This new genus is very interesting: it can be regarded as a "living fossil" because its nearest relative is known from Oligocene amber. All the material is preserved in

70 per cent alcohol and depositied in the collection of the Muséum d'Histoire naturelle Genève, except for 6 ♂ and 1 ♀ paratypes of *L. aelleni* (deposited in the Hungarian Natural History Museum).

I am very much indepted to Dr. V. Aellen and Dr. B. Hauser for making this priceless material available for study and to all collectors of the material below.

FLY SPECIES AND THE CAVES WHERE THEY WERE COLLECTED

HELOMYZIDAE

Heteromyza atricornis Meigen, 1830

France: 1 ♀: grotte des Huguenots, Ain, 17.6.1973, J. D. Bourne; two wings of a specimen: grotte de la résurgence de Lhuis, Ain, 12.3.1973, J. D. Bourne. It is a well-known troglophilous European species, found also in Switzerland (Aellen and Strinati 1962).

Scoliocentra caesia (Meigen, 1830)

France: 1 ♂, 1 ♀: Barme Froide Supérieure D 1, Haute-Savoie, 8.1973, J. D. Bourne. A little known species of a very problematic species-group (c. f. GORODKOV 1969). In the collection of the Hungarian Natural History Museum there are some specimens identified as *caesia* by Czerny, which have a genitalia completely identical with the specimens above.

Helomyza captiosa (Gorodkov, 1962)

Switzerland: 3 ♂, 1 ♀: grotte du Pontet, VD 29, Vaud, 4.11.1975, V. Aellen et P. Strinati. Great Britain: 1 ♂, 1 ♀: Buckhaven Gaswork's cave, East Wemyss, Fifeshire, Scotland, 14.6.1974, T. Oldham, P. Strinati et V. Aellen; 2 ♂: Cleaves Cove, Dalry, Ayrshire, Scotland, 13.6.1974, T. Oldham, P. Strinati et V. Aellen. France: 1 ♂, 1 ♀: grotte des Huguenots, Ain, 27.5.1973, J. D. Bourne; 1 ♂: Barme Froide Supérieure D 1, Haute-Savoie, 8.1973, J. D. Bourne. New to the fauna of all the countries above. It was known from caves from Italy, Ukraine and Hungary. In the collection of the Hungarian Natural History Museum there are specimens also from Netherlands, Germany, Poland, Slovakia and Rumania identified by K. B. Gorodkov. It seems an obligate troglophilous (if not troglobiont) species.

SPHAEROCERIDAE

Copromyza (Crumomyia) notabilis (Collin, 1902)

Great Britain: 1 ♂: Jonathan's Cave, East Wemyss, Fifeshire, Scotland, 14.6.1974, T. Oldham, P. Strinati et V. Aellen. The distribution of this species is little known through its false synonymification with *C. glacialis* Meig. Well established occurrence data from Czechoslovakia, Finland, Sweden and England (ROHÁČEK, 1976).

Copromyza (Fungobia) nitida (Meigen, 1830)

Great Britain: 3 ♀: Cleaves Cove, Dalry, Ayrshire, Scotland, 13.6.1974, T. Oldham, P. Strinati et V. Aellen. A widely distributed hemitroglophilous European species (cf. PAPP & PLACHTER 1976).

Limosina bequaerti (Villeneuve, 1917)

Great Britain: 1 ♂: Culzean Castle's Cave I, Culzean, Ayr, Scotland, 13.6.1974, T. Oldham, P. Strinati et V. Aellen. One of the low numbered European troglophilous sphaerocerid species (PAPP & PLACHTER 1976).

Limosina flavipes (Meigen, 1830)

Greece: 1 ♀: grotte Ton Limnon, Kastria, 17.5.1974, P. Strinati. Distribution: Palearctic Region, Juan Fernandez, New Zealand, Australia. Although sometimes it was found in caves, it seems trogloxenic species. New to Greece. Limosina heteroneura Haliday, 1836 — Malta: 2 ♂, 2 ♀: Hassan's Cave, 30.4.1976, P. Strinati et V. Aellen. Nearly cosmopolitan species, in all probability owing to human activities. Hemitroglophilous species, it is not rare in caves near to their entrance. It develops in decaying vegetable matter, on dung heaps, in compost, etc. New to Malta.

Limosina silvatica (Meigen, 1830)

Great Britain: 6 ♂, 2 ♀: Cleaves Cove, Dalry, Ayrshire, Scotland, 13.6.1974, T. Oldham, P. Strinati et V. Aellen. Hemitroglophilous Holarctic species, sometimes it was found rather far from entrance in caves.

Leptocera caenosa (Rondani, 1880)

USA, New Mexico: 1 ♀: Carlsbad Caverns, 16-17.12.1976, P. Strinati. A Holarctic, psychrophilous, hemitroglophilous species. In the Nearctic Region it was known only from Canada and Michigan. It is very probable that the species lives also far south to Michigan in caves and in places of similar ecological conditions.

CAMILLIDAE

Katacamilla gen. n. (Fig. 1)

Yellow, only partly brownish yellow. Head nearly 1.5 times higher than long. Antennae with comparatively long third joint. Third joint with dense and long, arista with scattered and short hairs. Head chaetotaxy: incurving cruciate pvt, strong vte, vti, moderately long oc, 1 posterior reclinate ors, 1 anterior proclinate ors (on half of frons) and 1 small mid reclinate ors. Rather thick but short vibrissae, some very thin and rather short pm. Mesonotum covered with evenly placed/distributed short bristles only four median rows ± well-ordered. Thoracic chaetotaxy: 1 h, 2 np, 1 prsut, 1 anterior shorter and 1 posterior very strong sa, 0 pa, 0 ia, 1 strong dc rather far from scutellum

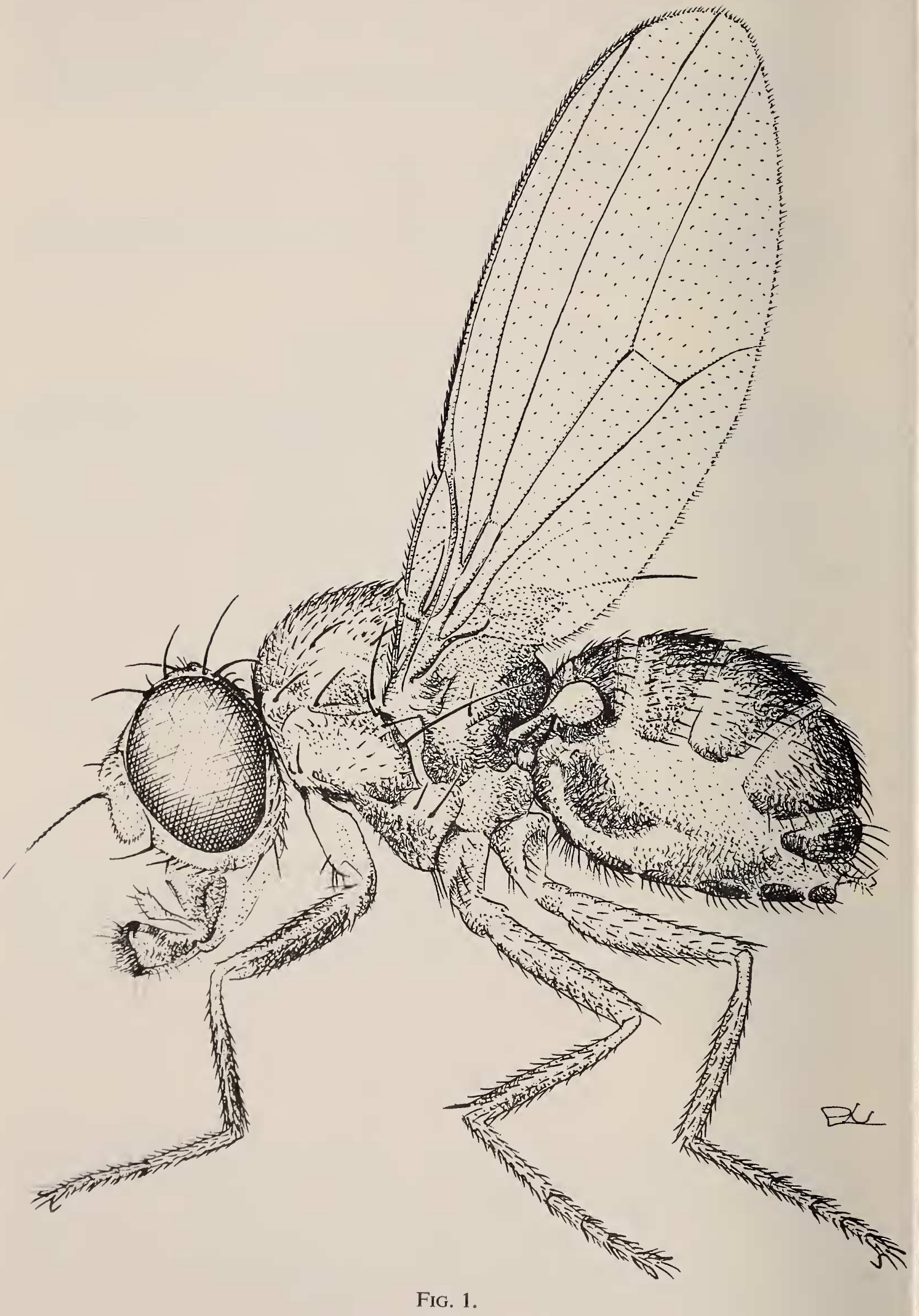


FIG. 1.
Katacamilla cavernicola sp. n.

(at a distance equalling half of their length), 1 very short anterior dc close to posterior, 2 sc pairs of bristles. Disc of scutellum and mesopleuron covered with scattered short bristles. 1 longer and 1 minute propleurals. Mesopleuron with 3 bristles on hind margin: 1 upcurving (!) bristle below hind np, 1 reclinate mid bristle and 1 robust bristle below it, which is longer than mesopleuron. Sternopleuron with 1 short and 1 longer upcurving bristles and some very short bristles. 1 upcurving pteropleural bristle. Legs simple. Fore coxae very long, fore femora rather short. No dorsal preapical on tibiae. Mid tibia with a short ventral apical. Costa of wing broken at conjointment with r_1 and distally to humeral vein. No basal crossvein. Subcosta rudimentary, short, only a little longer than half of the distance between hand r_1 conjointment. No anal vein, Anal cell closed only by a shade of vein. Alula absent. Abdominal spiracles out of tergites. Female 6th tergite bipartite, medially separated, 6th sternite distinct but all the other postabdominal sclerits absent and postabdomen telescopized. Moderately long cerci with thin hairs.

TYPE-SPECIES

K. cavernicola sp. n. South West Africa (Namibia).

Hitherto only two genera of Camillidae have been known (*Camilla* Haliday, 1838, recent and *Protocamilla* Hennig, 1965, Oligocene). This new genus stands about equally far from the two known genera and thus the three genera represent three severely separated ways of the evolution. Their differentiating characteristics are summarized in the following key.

KEY TO GENERA OF CAMILLIDAE

1 (2) Only 1 strong pair of dc, disc of scutellum with short bristles. Tibiae without dorsal preapicals. 1 distinct pteropleural bristle and 2 short propleurals. Fore femora without thick thorns or strong bristles. No postalar bristle. — No basal crossvein. Mesopleura with 1 upper upcurving, 1 moderately long mid reclinate and 1 very long reclinate bristle. Arista with short hairs only. Only 1 short vi. Yellow, partly brownish yellow species. Recent, South West Africa . . . . *Katacamilla* gen. n.

2 (1) 2 long dc pairs, disc of scutellum bare. At least mid tibia with dorsal preapical bristle. No pteropleural and propleural bristles (but see Hennig 1965). Fore femora with thick thorn or with strong and long bristles. Distinct pa bristle pairs.

3 (4) Arista with short hairs. Wing with basal crossvein. Mesopleuron with only moderately long bristles. Dorsal preapicals on all tibiae. Mesonotum with scattered microchaetae. Only 1 short vi. Body yellowish brown. Oligocene, Europe . . . . *Protocamilla* Hennig, 1965

4 (3) Arista with long rays. No basal crossvein on wing. Mesopleuron with 3 bristles: 1 upper upcurving, 1 mid reclinate and 1 robust lower reclinate bristle. Dorsal preapical on mid tibia only. Mesonotum with rather dense microchaetae. At least 2 strong vi. With few exceptions body black, bluish black to pruinose grey. Recent, Old World (introduced to Canada) . . . . *Camilla* Haliday, 1838

Katacamilla cavernicola sp. n.

Body mainly yellow, occiput, a median stripe on mesonotum, abdominal tergites brownish yellow, fore femora nad a distal part of fore tibiae yellowish brown. Palpi yellow and thin, only weakly spatulate. Anterior half of frons with small bristles, some. small interocellars an a well-ordered row of small postocular bristles. No genal bristle. Genae very narrow, less than 1/10 of longest diameter of eye. Three moderately long and some short bristles on hind lower part of head. One short pair of vibrissae. 1 peristomal half as long as vi and other 7 minute pm. Humeral callus with some hairs, notopleural region bare. Chaetotaxy (see above). Coxae with some longer but thin bristles. Legs without characteristic bristles except for a ventral apical on mid tibia. Costal break at end of r_1 without long bristles. Wings yellowish, veins yellow. Costa reaches m but ultimate section very thin. $mg_3/mg_4 = 1.37$. Stronger bristles on costa extending only to proximal ¼ of mg_3. $ta - tp/tp = 4.75$. No basal crossvein. Anal vein absent, anal cell closed only by a shade of vein. Halteres wax yellow. Abdominal tergites with comparatively weak hind marginal bristles. Sixth tergite bipartite, sternites 1-5 very small and weakly chitinized, 6th sternite with a stronger chitinization, other postabdominal sclerits absent and segment 7-10 telescopized. Cerci moderately long with some longer and many short hairs.

Body length of holotype female: 2.12 mm, wing measurements: 2.26 × 0.81 mm.

HOLOTYPE female: SW Africa (Namibia), Nosibhöhle, Otavi. 2.5.1972, P.v. Wrede et P. Strinati. The holotype is deposited in the collection of the Muséum d'Histoire naturelle Genève.

Judging by its outer morphology the species seems not troglobiont but at most hemitroglophilous.

MILICHIIDAE

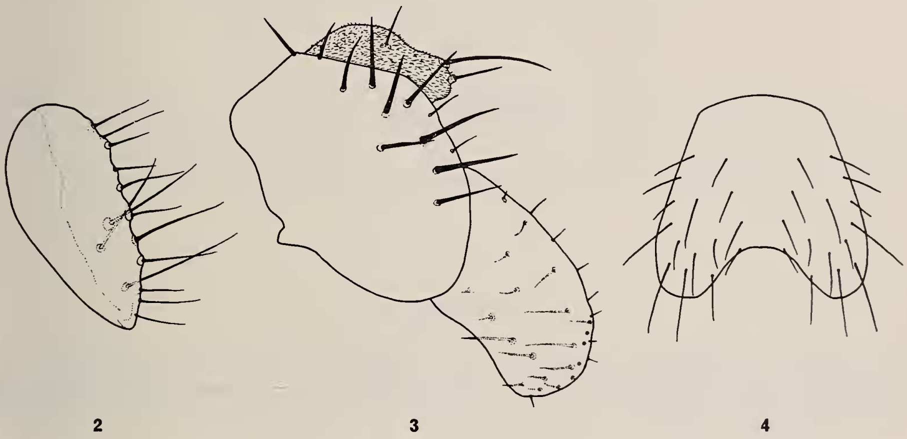
Pholeomyia leucozona Bilimek, 1867

Guatemala: 1 ♂: cueva Chirrepeck, Alta Verapaz, 6 and 8.4.1973, P. Strinati. It was described from Mexico (Cacahuamilpa Cave) as a new genus and species and although by now Pholeomyia became a genus of 36 described species, the type-species was not collected since 1871. The genitalia of the specimen above agrees completely with SABROSKY'S (1959: Fig. 3) drawing. New to Guatemala.

Leptometopa aelleni sp. n.

A small black species, only a narrow anterior margin on frons, genae and palpi not black. Head 1.4 times higher than long. Head chaetotaxy: cruciate pvt, strong vte, vti, oc, 2 exclinate ors, 2 inclinate ori, strong vi, very weak peristomals. Antenna in very deep cavity. Genae wide, ¼ as wide as longest diameter of eye. Palpi brown on lower margin, upper part yellow. Labella less than 1.5 times longer than palpi. Frons without dusted if stripes. Four small bristles on anterior margin of frons, about 4 inordered small if pairs. Pleurae shining black, mesonotum and abdomen grey dusted. Thoracic chaetotaxy: 1 h, 2 np, 0 prsut, 1 sa, 2 pa, 2 dc, 2 sc, 1 pteropleural, 1 st pairs of bristles. Legs short and comparatively thick, completely black. Male hind tibia broadened but in a smaller extent than in latipes (max. width only ¼ of length of tibia).

Wings light brownish, veins light brown. mg_3; $mg_4 = 1.33$. $t_a - t_p/t_p = 3.0$, $m_x = 4.0$, ultimate section of cu equalling penultimate section of vein m. Knob of halteres wax yellow to ochreous yellow, stalk brown. Male 5th sternite (Fig. 4) shorter than its width, with a median incision posteriorly. Surstylus (Figs. 2 and 3) only ⅔ as long as height of genital vault in profile; latter with comparatively short but thick bristles. Surstylus has long fine bristles only on interior side (Fig. 2). Female cerci long, brown, with moderately long, rigid bristles. Body length: holotype ♂: 2.73 mm, paratypes: 1.71-2.75 mm. Wing length: holotype ♂: 1.83 mm, paratypes: 1.45-2.29 mm, wing width: holotype ♂: 0.70 mm, paratypes: 0.58-0.83 mm.



Figs. 2-4.

Leptometopa aelleni sp. n.

2: surstylus in ventral view, 3: genital vault and surstylus in profile, 4: male 5th sternite

Holotype male: Nouvelle-Calédonie, grotte de Touaourou, Yaté, 8.4.1977, P. Strinati et V. Aellen. Paratypes: 16 ♂, 4 ♀: data same as for holotype. The holotype and 10 ♂, 3 ♀ paratypes are deposited in the Geneva Museum, 6 ♂, 1 ♀ in HNHM.

Among the known *Leptometopa* species there is a cavernicolous species (*L. mcclurei* Sabrosky, 1964) from Malaya (Batu Caves), but *L. aelleni* sp. n. is not closely related to it. Its nearest relative is *L. latipes* Meig. but the legs of *aelleni* are completely black, it has no yellow ring on tibiae, also tarsi without lighter hue. Fifth sternite of male is shorter than its length with a conspicuous median incision on hind margin (5th sternite of *L. latipes* is a little longer than its width, without a median posterior incision). The surstylus of *L. aelleni* sp. n. is only ⅔ as long as height of genital vault, while the surstylus of *latipes* is equal with height of genital vault in profile.

Leptometopa latipes (Meigen, 1830)

SW Africa (Namibia): 1 ♂, 1 ♀: Ghaubhöhle, Otavi, 29.4.1972, P.v. Wrede et P. Strinati. A widespread almost cosmopolitan species, the larvae were found commonly in nests of many bird species. Trogloxenic or at most hemitroglophilous species. New to Namibia.

Leptometopa sp.

Fiji: 2 ♀: Wailotua Cave, Wailotua, Viti Levu, 30.3.1977, P. Strinati and V. Aellen. Unfortunately only two females were found in this material. Their very narrow genae show that they may belong to a new species (legs coloured as in *L. latipes*, anterior part of frons widely reddish yellow), nevertheless I do not risk a description of a new species based on female specimens only.

Desmometopa m-nigrum (Zetterstedt, 1848)

SW Africa (Namibia): 3 ♂: Albathöhle, Otavi, 30.4.1972, P. v. Wrede et P. Strinati, Nearly cosmopolitan, probably owing to human introduction. It was known also from S. Africa and Tanzania (Sabrosky 1965). Its larvae are scotophilous developing in various kinds of decaying materials (dung, etc.) but the species is trogloxenic.

Carnidae

Meoneura flavifacies Collin, 1930

France: 1 ♀: grotte de la Barme Froide, Haute-Savoie, 13.9.1973, J. D. Bourne. A common Holarctic species. First record of a carnid species from caves. In all probability it is a trogloxenic species.

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